

## **Aerial Apparatus and Aerial Device Positioning**

The apparatus operator assigned to a truck company in an urban area can encounter many obstacles that may affect the placement of the apparatus and deployment of the aerial ladder. In a county like Montgomery with its variety of developments these obstacles include congested, complex, and narrow streets. Many of these streets are also lined with overhead obstructions in the form of trees and overhead wires.

Life Safety is the 1st priority on the fireground. You must determine what your unit will be used for based on the dispatch information and the conditions observed upon arrival.

An aerial unit must be positioned very close to a structure if the aerial device is to be deployed.

Since the aerial device has a fixed length, it is imperative to get within reach of the target. Sometimes that means taking a moment to get around obstacles or getting them moved to gain position.

Most electrical cord reels on trucks are between 200-300 feet. So the unit must be positioned within this range or portable generators will have to be used.

### **While Responding**

Driving an apparatus with lights and sirens can be stressful. The driver must be concerned with finding the quickest route to the scene while considering factors such as traffic laws, street conditions, traffic congestion, and pedestrian traffic. Additionally the apparatus operator must consider factors that may affect placement of the apparatus upon arrival and deployment of the aerial ladder, such as the general response patterns of nearby companies.

In Montgomery County, a full assignment generally consists of five engines, two aerials, one rescue, two chiefs, and one medic unit. The aerial driver should know from where all the companies are responding and their dispatched running order. Particular attention should be given to the location/direction from which the first engine and other aerial company are responding. This information can affect apparatus placement and use of the aerial. With two truck companies responding, consider adapting running routes to have the two aerial companies approach the fire building from opposite directions. This strategy will offer the best opportunity for aerial access to all sides of the fire building.

Most often the first-due engine will approach the alarm location first. When the first-due engine arrives first, the engine operator can position the engine just past the fire building to allow hoseline deployment without obstructing the aerial apparatus position. Allowing room for the aerial company near side A also allows the truck crew to efficiently deploy ground ladders.

Often on a structure fire assignment, there is no fire evident when companies

arrive to make the location obvious. Thus, it becomes important for the driver to know the incident address. Knowing if the address is an odd or even number can help the driver to determine on which side of the street the fire building is located. Also, the driver can use the last two digits of the address to help estimate the location of the building on the block—for example, extremely low digits such as 00 or 03 or extremely high digits such as 95 or 98 might indicate a corner building, whereas the last two digits such as 45, 50, and 53 might indicate that the building is in the middle of the block.

### Approaching the Scene

The most important thing the driver of aerial apparatus, or any apparatus, can do is SLOW DOWN and approach the fire block in a controlled manner. This will allow the operator, officer, and crew time to size up the situation.

*“Never drive faster than you or your officer can think.”*

Factors on the street that can affect the placement of the aerial include overhead obstructions, fire apparatus already on the scene, hose on the ground, narrow streets, and parked cars.

In a tractor-drawn unit, good communications and an excellent working relationship between the driver and tiller will pay big dividends in effectively positioning the apparatus. The driver, tiller operator, officer, and crew can use their headsets to maintain communication on the rigs. As the driver brings the apparatus into the fire block, the tiller operator often has the best view of the overhead obstructions. In many cases, the tiller operator can determine if the aerial ladder can clear any overhead obstructions as they can see the entire length of the ladder from their seating position.

### Overhead Wires

In many neighborhoods, overhead wires and power lines are a common obstruction. As the driver notices the wires on the approach to the fire block, they should observe the side on which the power poles are located.

Maintain at least 10' clearance to overhead power lines.

For economy, utility companies often share poles that run on one side of the street. The wires will restrict the aerial's deployment to the houses on that side of the street however, the houses across the street are another story. Since no power poles are on that side of the street, wires will be strung across the street from the power poles. These wires, or “service drops”, are attached to houses at different angles and heights. These buildings may be laddered, but the aerial may still need to be deployed between, above, or below the wires.

Often, overhead wires or obstructions will alter the normal sequence of functions to position the aerial. The operator may need to rotate the aerial underneath an obstruction to get the ladder in position before it can be raised and extended. Since the ladder must be rotated at a low-angle inclination to get below the wires, the turntable will need to be approximately 25 to 30 feet away from the nearest structure or other obstruction that could limit rotation. It may even become

necessary to rotate nearly 360 degrees or bring the aerial to a nearly vertical position to clear obstructions.

If your apparatus should become energized by overhead power lines, the first option is to move the aerial away from the wires. If the aerial cannot be moved resist the urge to step off the unit. It may be best to remain on the apparatus until the lines are de-energized. If this is not an option due to fire or other developing conditions, the most important thing to avoid is contacting the ground while also in contact with the apparatus. If you must jump from the unit, jump as far as possible and do not touch the ground while touching the truck.

**WARNING!**

If you must exit the apparatus, jump completely clear. Beware that the ground around the apparatus may also be charged with electricity. While moving away from the apparatus, shuffle your feet and do not take large strides until well clear of the apparatus. Any difference in electrical potential can cause electricity to use your body as a path to ground.

**CAUTION!**

This material talks primarily about overhead wires on a fireground. Do not become complacent during routine activities such as shift check-out or public education events. Firefighters have been electrocuted, burned, and suffered other traumatic injuries during non-emergency aerial operations. Overhead wires are a concern whenever raising an aerial.



A Philadelphia Snorkel burns after contacting wires during a public education event in front of their firehouse.



Fairfax County firefighters were injured during morning checkout when the aerial was raised into the wires across from the station.

## Arriving Later

When you are not first arriving, observe the placement of the units already on the scene before committing your apparatus. The driver of the second truck arriving at the scene must pay attention to the placement and breed of the first-arriving truck while considering the limitations of their own apparatus. Has the first truck pulled past the address with a rear-mount aerial while the second truck is a mid-mount? Should the next arriving truck go around the block and approach from

the opposite direction? Would it be best to back down to the scene? Where is the access for side C? Be sure to leave room to deploy the ground ladders from the rear chute of your apparatus and other aerial units already on the scene.

Sometimes, the next arriving aerial unit will just not have space to position for their aerial. The operator should never force the situation. The block may be small and the street narrow. The first-due truck may already be on the scene and adequate for the incident, the fire building might be down an extremely narrow street or alley, rural water supply operations may require access, or illegally parked cars might prevent the truck from entering. In these situations, the driver of the truck should park the rig so that it will not block any intersections or hydrants or hinder incoming units. The aerial will be useless, but ground ladders can still be deployed and the company has not made the scene worse.

If the aerial unit can proceed down the narrow street or alley, the driver should still consider that extra space is needed to extend the outriggers, obtain equipment from compartments, and deploy ground ladders. Just because a unit *can* physically fit down a street does not always mean it *should*. In tight areas, the crew should dismount the rig and assist in the placement of the apparatus so that the outriggers and aerial can be deployed.

### **“Lawning” or “Beaching”**

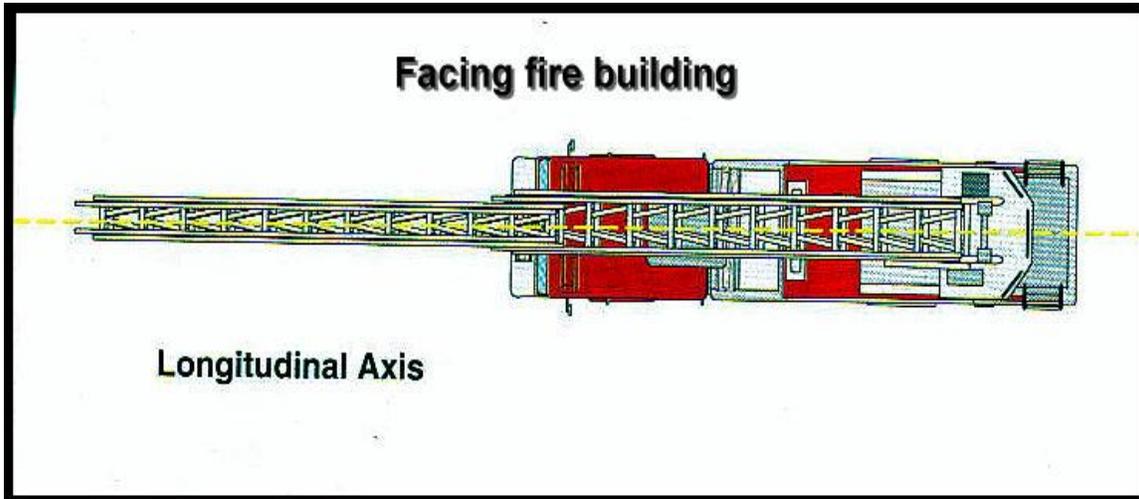
Positioning aerial apparatus off improved surfaces should be an exceptional situation that requires conservative evaluation when considered. If the situation mandates leaving the normal travel ways, the following impact the successful outcome:

- The apparatus manufacturer’s recommendations (does the manufacturer endorse setting up on these surfaces?)
- What part of the apparatus will be off the road? Will the drive wheels remain on the hard surface? Will the stabilizers reach to a hard surface?
- Will positioning allow nosing in to the structure or will the aerial be operating over the side of the apparatus?
- Type of surface; grass, dirt, gravel, driveway, sports courts or fields, landscaped areas/flowerbeds
- Ambient temperatures; is the ground frozen?, will it stay frozen?
- Is the surface hard enough to support the weight of the apparatus?
- Has there been any significant precipitation recently?
- Will the grade or topography allow stabilization according to the manufacturer’s recommendations?

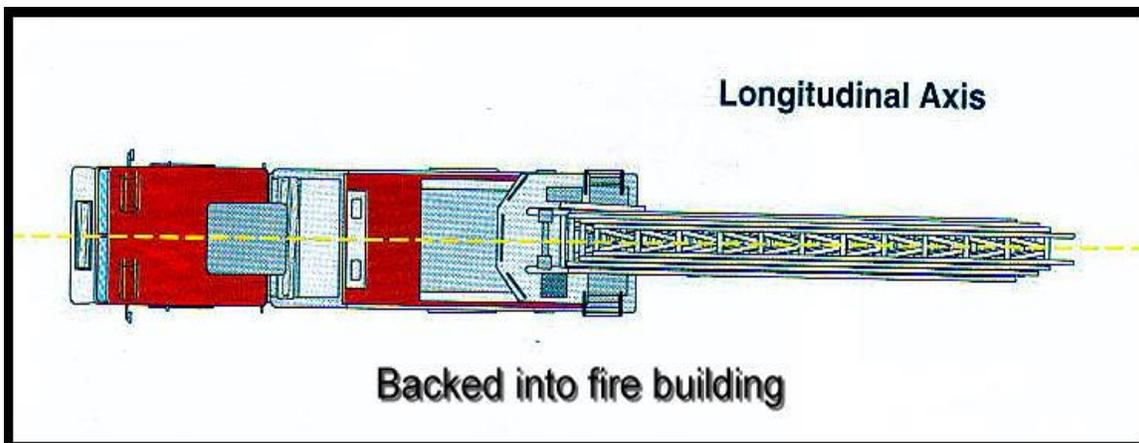
### Three Approaches – Pulling in, Backing in, Parallel

Drivers must know the pros and cons of pulling into, backing, or paralleling a structure as they pertain to the breed of apparatus.

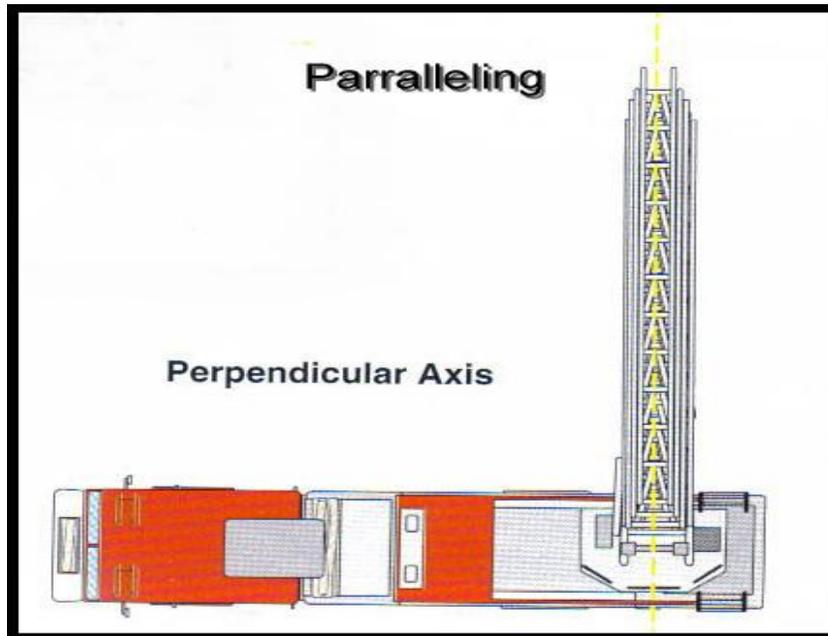
*Pulling/Nosing-* Is when the front of the unit faces the structure as it is parked or positioned. At this position, the aerial will be in use over the cab and unit. Aerial reach may be lost due to the aerial device extending over the vehicle before it reaches a target. Some mid-mount apparatus may require the aerial to be elevated above a minimum angle to position over the cab. This is the most stable aerial position.



*Backing in-* Places the rear of the vehicle closest to the building. On rear mount aerials, the turntable is closer to the structure than the cab and provides for maximum aerial reach and very good stability. Rear-mount aerials should be backed into buildings when the height of the building is more than 3 stories, or the choice of positioning keeps the turntable more than 35 feet away. On mid-mount apparatus some reach is lost as the aerial has to extend over the body of the truck. This position also places the unit in an advantageous position to minimize travel distance for deploying ground ladders to the building.



*Paralleling*- Places the side of a vehicle closest to the building. Positioning the apparatus parallel with a building still affords the operator the opportunity to get the turn table close enough to the building for the maximum reach. This is the most common of positioning choices as travelways most often parallel structures. Mid-mount towers must position in this fashion if master streams are to be used at grade (ground level) or below grade. This position is the least inherently stable position for aerial operations and places the most pressure on the individual stabilizers.



### **Aerial Reach - Scrub Area**

Scrub area is the area of a building or object which the tip of the aerial ladder or platform will reach. The scrub area varies greatly dependent upon the positioning options for the apparatus and the length of the aerial. Drivers and unit officers must maximize the scrub area whenever the aerial device is being considered. Scrub area begins for aerial towers from the ground floor up while it is considered from the second or third floor up for aerial ladders.

### The Pythagorean Theorem & Pre-Planning

When estimating the reach and placement of the aerial, consider a right triangle. The length of the hypotenuse (longest side of a triangle) equals the square root of the sum of the other two sides. When an aerial ladder is elevated, it creates the hypotenuse of a right triangle with the ground and wall of the building representing the other two sides. Knowing this, the reach of the aerial from a given location can be estimated.

The square of the length of the hypotenuse of a right triangle equals the sum of the squares of the lengths of the other two sides, i.e.  $A^2 + B^2 = C^2$



In this illustration, “A” equals the height of the building (estimate 10 feet per floor for residential buildings and 12 feet per floor for commercial and multi-family structures), “B” equals the distance from the building to the turntable, and “C” is the distance required to reach the building.

#### Example 1:

To reach the 3<sup>rd</sup> story window of a townhouse that is 50 feet from the location of the turntable.

A is estimated to be 25 feet.

B is 50 feet.

C is the estimated aerial reach.

$$A^2 + B^2 = C^2$$

$$(25 \times 25) + (50 \times 50) = 625 + 2500 = 3125 = C^2$$

$$C = \sqrt{3125} = 56$$

The approximately distance from the turntable to the 3<sup>rd</sup> story window is 56 feet.



Example 2:

To reach the 4<sup>th</sup> story window of a commercial building that is 25 feet from the location of the turntable.

A is estimated to be 40 feet.

B is 25 feet.

C is the estimated aerial reach.

$$A^2 + B^2 = C^2$$

$$(40 \times 40) + (25 \times 25) = 1600 + 625 = 2225 = C^2$$

$$C = \sqrt{2225} = 47$$

The approximately distance from the turntable to the 4<sup>th</sup> story window is 47 feet.



## Apparatus Positioning for Aerial Access

Aerial apparatus should take preference over other apparatus on building fires. Engine driver/operators have been taught to leave room for the trucks and towers mainly by pulling past or just short of fire buildings. This option may not always be available to incoming or first arriving engine companies. Because of sidewalks, parked cars, tight parking areas, and other roadside obstacles, other positioning alternatives must be considered.

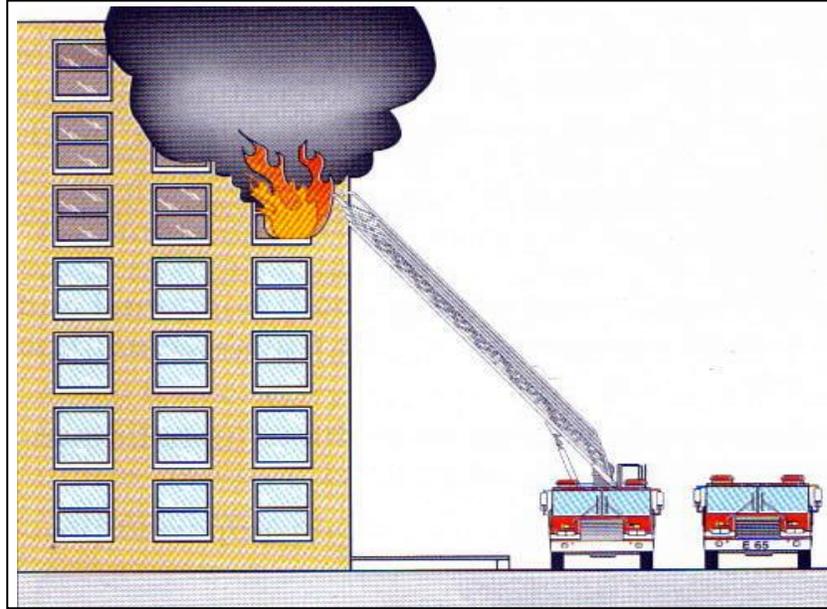
The following are considerations only and not department policy.

If the fire is located on upper floors of a building that is less than five stories, the aerial apparatus may be positioned outside of the engine company.

\*If fire is located on the lower levels of this building, this tactic is not recommended for Aerial Towers. The engine company might prevent the tower from sweeping low while the master stream is in use.



If the building is greater than five stories, the aerial apparatus should be positioned inside the engine company.



## Aerial Device Positioning – Tips & Tricks

Once the apparatus is properly parked and stabilized, the aerial is ready to be used. For deployment of the aerial ladder, the three major evolutions are raise, rotate, and extend. Under ideal conditions, these evolutions are done one at a time and in proper operating sequence. Obstructions may necessitate that the operator deviate and make adjustments on some of the evolutions; however, the theory on raising the aerial remains basically the same. Before beginning any operation with an aerial ladder, determine the task so any pre-piped waterway may be locked into the appropriate position. Normally, pre-piped waterways will be stowed in the “rescue” position to reduce the profile of the aerial tip during tasks not involving an aerial master stream or flying standpipe.

Two common miscalculations new or inexperienced aerial operators make are placing the ladder well above the target and extending the ladder well short of the target. These common errors will force the operator to make time-consuming adjustments to get the aerial properly positioned.

For ideal aerial placement, the retracted aerial should be raised from the cradle to an angle at which the operator can rotate the ladder to a perpendicular position facing the building. At this position, the operator can adjust the angle of the aerial. These adjustments are to align the retracted ladder with the intended target. Once the alignment has been determined, the operator can extend the aerial to a close proximity over the target. With the ladder over the target, the operator can bring it toward the object in a smooth and controlled manner.

The angle of inclination must be properly determined for the next step to be successful. When operators extend the ladder well short of the intended target,

the main problem is depth perception. Two methods can help the operator solve this perception problem. One method is for sunny daytime operations; the other is for incidents that occur at night and on cloudy overcast days.

The shadows of the aerial ladder are used to assist in extending the aerial ladder. This method works if the building is in direct sunlight. The operator picks up the shadow of the aerial as it moves along the wall of the building as the aerial is being extended toward the target. When the tips of the shadow and of the aerial are close to meeting, the ladder is close to the building.

If the aerial has floodlights at the tip, these lights can help the aerial operator to judge the proper distance for extending the ladder. These lights are particularly effective during night operations. When the aerial is resting in the cradle, at least one floodlight should be facing down and the other facing out in the direction of the tip. The lights should always be in the "ON" position.

The floodlights will illuminate the face of the building and the target area when the aerial is raised, rotated, and in position to be extended. They will also help in spotting wires or other obstructions that may be difficult to see. As the ladder is extended to the building, the light pattern will move toward the structure and become sharper. With practice, an operator can tell by the light pattern how close the tip of the aerial is to the target. If the aerial or platform is being positioned past a parapet wall or balcony, the downward facing light will help judge when the aerial is over the desired location.

Here are some factors the aerial operator must consider to ensure that the aerial is in proper position and safe for members to climb:

Always be aware of overhead obstructions as the aerial is being deployed. Leave sufficient space for personnel to climb the aerial. Keep the aerial at least 10 feet away from overhead wires to allow for ladder sway, rock, or sag. If the aerial should contact a power line, personnel should remain on the apparatus until the power is shut off or the aerial is freed from contact.

Unless otherwise specified by the manufacturer, modern aerials are designed to be used in an unsupported position. Do not rest the aerial or platform on a structure or the ground. The ladder and/or platform needs to remain 4 to 6 inches away from a structure. This allows the ladder or platform to avoid contact with the building as the device flexes under the load of personnel, water, or equipment. Aerials are especially vulnerable to failure when one beam becomes supported causing the ladder to twist.

## **Operating from the Platform or Tip**

Aerial towers offer the option of positioning the device from the platform in addition to the turntable. When operating the aerial device from a position other than the turntable, personnel tend to focus on the target and lose awareness of the aerial behind them. Operators need to check the path of the entire length of the aerial device as it moves to avoid striking trees, wires, poles, other apparatus, other aerial devices, the apparatus itself, or other obstructions. It is

advantageous to have someone spotting from the turntable or at least watching down the aerial from the platform to warn of impending collisions. Do not rely upon integrated collision avoidance systems to avoid damaging the apparatus with the aerial device.

Judging distance or visualizing obstacles, especially below the platform, while operating from the platform can be challenging. The structure of the platform often creates blindspots. Operators must know the features of their platform that may expand its dimensions, i.e. floodlights, bumpers, lifting eyes, master stream nozzles.

Under normal circumstances, personnel must be secured by ladder belt or other safety mechanism when operating from the aerial device. This prevents the member from being thrown from the aerial should there be a sudden or unexpected movement of the aerial. The farther an aerial is extended the greater the risk.

Operators should confirm members occupying the platform are ready and access doors are secured before moving the device. The smallest unexpected movement can cause a member to lose their balance.

When approaching the target, consider using low or slow speed options that most aerial devices offer. This allows finer control of the aerial device while making final positioning adjustments. This is important for avoiding a collision with the target structure.

While not common in Montgomery County, some aerial ladders have optional “creeper” controls located at the tip of the aerial that will move the aerial device at very low speed with a firefighter at the tip. Personnel need to familiarize themselves with the operating characteristics and interlocks of this feature as it is encountered.

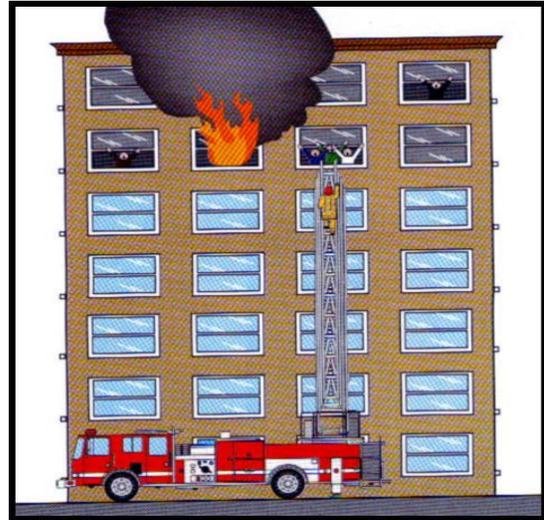
## Using an Aerial Device for Rescue

In situations that require using aerial apparatus for rescue, the main objective is to reach as many victims as possible with the minimum number of aerial movements. Remove victims in the following order of priority:

1. Most severely threatened by current fire conditions
2. Largest number or groups of people
3. Remainder of people in the fire area
4. People in exposed areas

Rescues should be attempted (if possible) on the upwind side (windward) of a window or door to maximize visibility in heavy smoke conditions and to minimize possible heat exposure.

If the possibility of rescue lies in buildings with windows on multiple sides, positioning the turntable at the corners may offer the best position.



## Raising the Aerial Device to a Victim

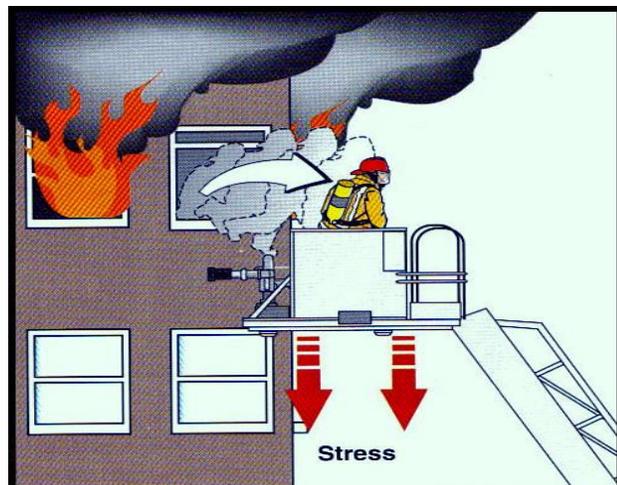
When the aerial device is deployed out of the cradle of the apparatus, it must be used in the following order or sequence while being moved to a target:

1. Raise (out of cradle)
2. Rotate
3. Extend
4. Lower (into object or target)

The best practice is to raise an aerial device above the victim and then lower it down into position.

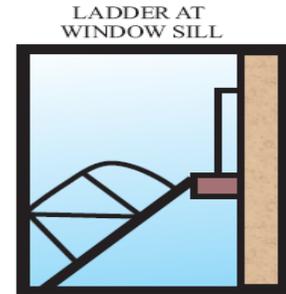
Extending the aerial ladder or platform up to a victim requiring rescue from below may encourage the victim to jump onto the aerial device. Fire fighters or victims jumping down onto a platform or aerial ladder cause tremendous shock loads resulting in damage and/or failure!

LADDER BEING LOWERED TO VICTIM

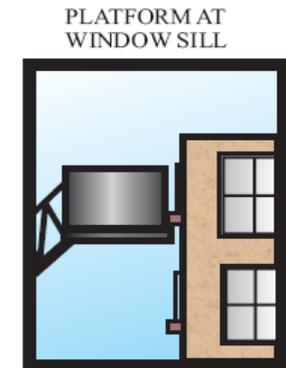


## Window Access

Similar to a ground ladder, aerial ladders placed at a window for rescue should be positioned at or below the sill. If an opening is large enough or there is enough room for a victim or firefighter to climb over or around the ladder rails, the ladder could be placed off-center inside a window. Under normal conditions with residential windows this tactic will compromise some of the opening and reduces the area the window or fire escape provides should members or civilians need a quick bailout.



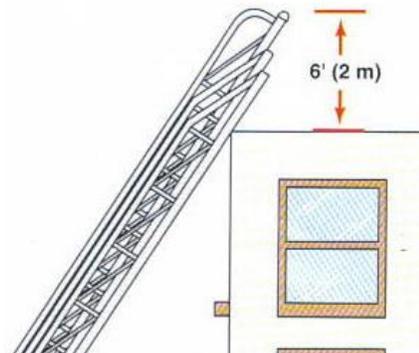
For aerial towers, the platform should be positioned with the front edge of the platform even with or just below the window sill. Be sure to position the platform access doors to maximize the available opening in front of the window.



Another position to consider in some situations is placing the upper railing of the platform even with the window sill. This position allows firefighters in the platform better leverage if an unconscious person needs to be lifted out of the window or better visibility when attempting to guide someone on the interior to the window. The disadvantage is that gravity may cause the person exiting the window to shock load the platform if they have an uncontrolled fall.

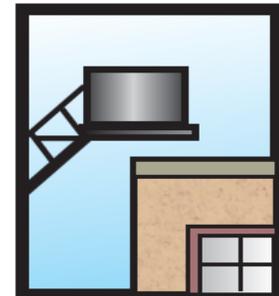
## Roof Access

For roof access, aerial ladders should be extended three to six feet over the edge of the roof. The extended ladder will provide greater visibility for the members on the roof to locate the ladder should conditions begin to deteriorate. The extension also provides members a firm handhold at a normal standing position while mounting or dismounting the ladder. Be sure to leave space between the aerial and the structure so the aerial does not rest on the structure.



Aerial platforms should be positioned with approximately half the platform over the edge of the roof if possible so members can step off to the roof away from the fall hazard of the edge. If conditions do not allow this, position the platform with the front edge of the platform even with the roof edge.

PLATFORM POSITIONED ON ROOF



Parapet walls present an additional challenge for roof access. Crews may find it necessary to use a ground ladder to transition from the aerial device to the roof with parapets over approximately 3 feet high. It improves operational efficiency for the aerial operator to recognize the presence of a high parapet by noting the position of scuppers, cockloft vents, or through observation of all sides of the building upon approach. Whenever the option exists, position the apparatus to avoid traversing high parapets or facades for roof access. Many times the high parapet does not extend around the entire perimeter of the roof and positioning on another side provides easier access. This is especially prevalent in strip shopping centers.



## Aerial Use

Once the aerial is in position, the operator must stay near the turntable. Under most situations, the aerial should never be moved. The operator should be aware of which members climbed the aerial ladder, when, and their present locations. If ordered to move the aerial, the operator must inform the incident commander that the aerial was used, and the crew must be notified by radio that the aerial is being moved. By remain available near the turntable, the operator can be available to shuttle tools or equipment to the upper floors or roof.

Some additional considerations when using an aerial device:

- Except for removing firefighters from serious exposure or rescuing them in an extreme situation, an aerial ladder should not be moved from the turntable while people are on it.
- The ladder should never be extended or retracted while members are on it.

- When the aerial is used for access, the rungs should be aligned whenever possible for better footing during climbing.
- Aerial ladders are rated for a distributed load, thus members should maintain spacing when climbing an aerial whenever possible.
- Once the aerial ladder is in position, prevent accidental movement by closing the cover or activating the E-stop to disengage power to the controls.
- When the aerial device is not immediately needed for personnel access, consider positioning the tip or platform with the flood lights facing into upper floor areas to aid interior crews with illumination and identifying a secondary means of egress. The aerial can also provide area lighting when positioned above an operation area.

### Weather Considerations

Windy conditions can place dynamic loads on aerial devices. Each breed of apparatus may have different manufacturer's recommendations for various wind speeds. Generally, aerial devices are fully rated up to wind speeds of 35 miles per hour. It is the operator's responsibility to identify any restrictions for the apparatus they are tasked with driving.

Operating in icy conditions can also have adverse affects on the apparatus and operators. Stabilizing aerial apparatus on compacted snow or even ice can be very dangerous, as the snow or ice can melt away after stabilization has been completed causing the apparatus to settle and potentially become unstable. If you are operating under these conditions periodically ensure the aerial/stabilizer interlocks remain engaged. If you find the interlocks disengaging that is an early sign that the stabilizers may require resetting. Snow or ice below the stabilizer pads can also cause the apparatus to slide as weight is transferred from the vehicle axles to the stabilizers. Ensure wheel chocks are in place and maintain contact between the tires and the road surface as permissible by the manufacturer's recommendations for aerial stabilization.



During cold weather, the steel and aluminum material of an aerial device readily accumulates ice from active precipitation or fire streams. Manufacturers may require de-rating of the aerial when ice accumulations reach a predetermined depth. Generally, ice accumulations in excess of 1/4" become a concern regarding loading of the aerial. Much like other features of the apparatus, operators must know the guidance for their specific breed of apparatus. Periodically extending and retracting the aerial may aid with removal of ice accumulation. Keeping the aerial ladder greased according to the

manufacturer's specifications also aids in removal of ice accumulation. In addition to the loading of the ladder, ice creates a significant fall hazard at the turn table, access ladders, and on the aerial.

## Collapse Zone

The condition of the fire building, as well as other building-related concerns, must be considered when positioning the apparatus. Buildings that have been subjected to extensive fire damage or buildings in poor condition before the incidence of fire may be subject to sudden collapse. Beware of facades or parapet walls that can fall from the building as fire weakens their attachment points.

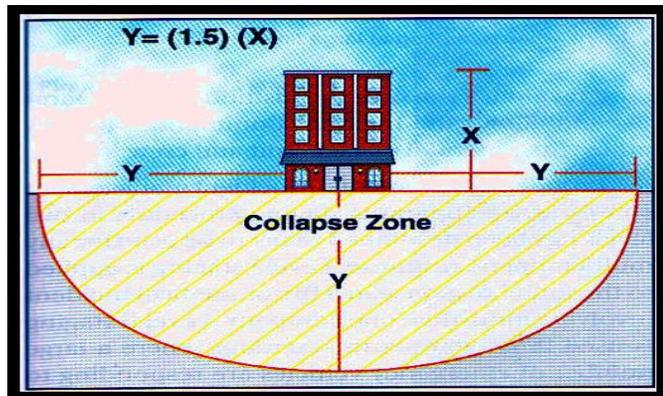
Positioning apparatus within an effective distance of the structure while maintaining protection against a collapse is difficult. The rule of thumb for defining a collapse zone is a distance at least equal to one and one-half times the height of the building.

A greater degree of protection is afforded by parking apparatus at the corners of the building rather than directly in front of the building face. This also offers aerial access to two sides of the structure.

While the apparatus may be parked outside the collapse zone, beware of placing the aerial device in a position that exposes it to falling debris. An aerial ladder, or worse an occupied platform, should not be operating within the collapse zone when the building is showing signs of weakening.

All firefighters should be able to identify the warning signs of collapse, which include:

- Structural inadequacy or signs of temporary bracing, poor construction, illegal or non-engineered renovations (be on the look-out for these every day before a fire occurs – know your response district)
- Buildings under construction or renovation
- Fire size and location, and conditions on arrival
- Age of building
- Previous fire
- Fire load to structural members



- Fire duration
- Backdraft or explosions
- Involvement of engineered lumber, truss joists, nail plates
- Live load increase as a result of firefighting operations (an aerial master stream adds at least 500gpm, or 2 tons of water per minute)
- Cutting structural members during breaching or venting operations
- Cracks, bulges, or other movement in walls
- Water or smoke pushing through exterior walls
- Unusual noises coming from building or dwelling
- Interior or roof reports of soft or spongy floors
- Ice, snow, or water accumulation on roofs

### **Operating near Railroad Tracks**

While incidents adjacent to railroad tracks are rare, they are a possibility within Montgomery County. Aerial apparatus operators must keep the following in mind as special precautions to take when an incident places the apparatus near a rail right-of-way:

- Park apparatus at least 25 feet from a rail right-of-way.
- Operate with the assumption that rail traffic has not been stopped. Beware that rails may be shared by different entities, so contacting one to stop traffic may not stop all traffic. Railroad sidings or spurs may remain active even when the main line has stopped.
- Whenever possible, avoid crossing the right-of-way to conduct operations. Park apparatus on the same side of the right-of-way as the incident scene.
- If aerials must be operated across a right-of-way maintain at least 25 feet of clearance between the rails and the aerial device.